

THE

QL

MAGAZINE

Volume 31 Issue 6 DEC JAN

2014



QUANTA
QL USERS & TINKERERS ASSOCIATION



QUANTA

INFORMATION ON THE ASSOCIATION

Membership of QUANTA, the independent QL user group, is by annual subscription. The Membership Secretary can supply full details. Copies of the association's constitution & annual accounts are available from the Secretary.

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As we finish the year and conclude the QUANTA magazines' nod to other SINCLAIR magazines depicted on our front covers, we have included in this issue, some of the front covers from past QUANTA magazines including the very first Issue 1. This and other issues are now available for you to download at your leisure from the QUANTA website.

Speaking of old QUANTA issues, the never-ending thankless task of scanning old QUANTA magazines continues by our resident scanner JG. He recently sent me a little gem that he found and just in case you were thinking the 'QL is 30' at Edinburgh was unique. This was discovered from the QUANTA Magazine Volume 2 Issue 6, Page 28 - JULY 1985.

EDINBURGH WORKSHOP

We recently held a one-day workshop at the Mansion House Hotel, Edinburgh. Ted Gladstone, proprietor of the hotel, and Dick Mackie, are leading lights in STAQLUG (the Scottish TRS-80 and QL Users Group) which meets in the hotel.

The hotel is very impressive, having been originally built as a batchelor pad by Lord something or other in the 18th century. Ted and his father bought the building in a derelict state and have largely restored it to its original splendour.

About 30 QL users turned up, and attended a couple of sessions given by me, with no apparent ill-effects. Dr. Jon Malone of Talent Software gave a very interesting talk on how Talent develop their software - they use a language called 'STAB' (similar to BCPL and C, developed at Strathclyde University) running on a Wicat 68000 machine under Unix.

My thanks to Ted and Dick for organising the meeting.

Leon Heller

Now this tells us two things, firstly there was a successful meeting early on in the QL lifetime in Edinburgh. Secondly, John appears to be working on Volume 2 of the QUANTA magazines, only a few more years to go, keep up the great work. Now this got me thinking as to how other computer magazines have faired over the years.

Well the answer could be an article in itself, however suffice to say there are not many that are still being produced in print form. QUANTA readers are a privileged few it seems, and here is a brief snippet I have found from the web.

Byte started in 1975 for a 23 year reign seems to be the first, PCW the first computing magazine I bought regularly started life in 1983 when the ZX Spectrum was in full flow. Its sister magazine MAC World is however still going in print form. Now if you would like to write an article based on this or even correct something I may have put down incorrectly then let us know via the contact details.

With that in mind there is another recent item worthy of pointing out and that is the crowd funded “Sinclair Spectrum Vega”, a poor substitute for the real thing but you can play loads of built in games (as I understand it). Retro and nostalgia rolled in to one it appears to me too gimmicky, relying on fondness of all things past and adding nothing to create new generations of keen computing people like the Raspberry Pi strives to. A new version of which has recently been announced by the website and at a cheap price <http://www.raspberrypi.org/raspberry-pi-model-a-plus-on-sale/>. If anyone has been able to get a QL emulator running on a Pi that we can publish, please let us know.

Finally, before I start sounding completely like the News Editor, check out the BBC link and video regarding Sir Clive Sinclair in our ‘currently watching’ item on the contents page. The interview is a little enlightening to say the least, is he still in the computing business? What about the seemingly ill fated second attempt at Sinclair Electric vehicle? The website still shows delivery expected July 2011 from <http://www.sinclairzx.com/>, oh well.

Compliments of the season. The Editor

If you have QL-related news items that you'd like us to include on this page, please get in touch with News Editor - Dilwyn Jones at news@quanta.org.uk

Turbo Updated

George Gwilt has issued an update to the Turbo compiler. TURBO v 5.09 now correctly compiles COMMAND_LINE when this procedure has a parameter, which it does when a daughter basic is to be selected.

Turbo may be downloaded free of charge from:

<http://gwiltprogs.info>

QL SuperBASIC Book Available Again

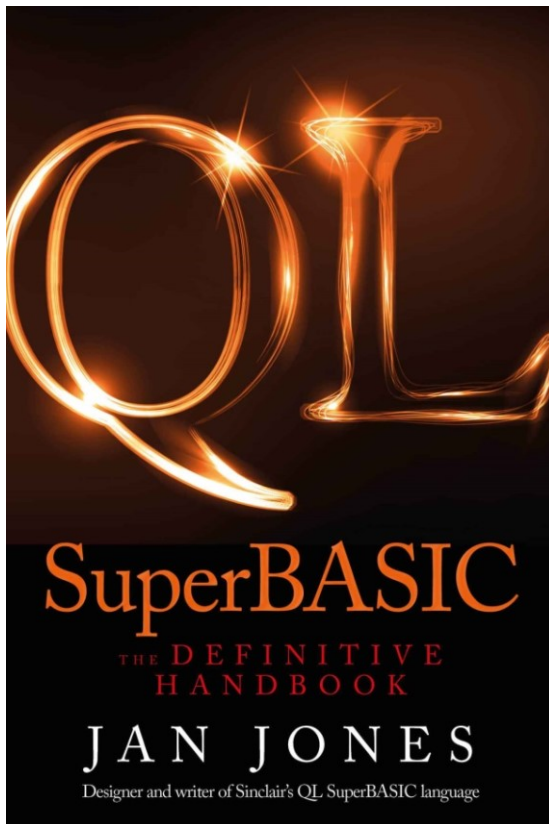
This book was first published by McGraw-Hill (UK) Ltd. in 1985 and due to overwhelming demand by QUANTA Members and with Jan's permission, the QUANTA LIMITED EDITION was published in July 1989. The author, Jan Jones, has made "QL SuperBASIC, The Definitive Handbook" available once more.

It's available in Kindle eBook reader format. While this makes it suitable for use on Kindle machines, there is also a free to download Kindle reader program which runs on Windows, for example, making it possible to read the book alongside using a QL emulator on a PC.

It took her a while to release this, as it proved to be impractical to scan it – she retyped and reformatted it to make it available on Amazon markets. Just search for "QL SuperBASIC" on Amazon,

more than one will come up in the search, just choose the Jan Jones book. The UK price is £5.14, which includes VAT and wireless delivery via Amazon Whispernet. Alternatively, go direct to <http://www.amazon.co.uk/gp/product/B00P569EH4>

Oh, and you'll find that there is a short review by a certain John Gilpin on there too .



Jan Jones emailed John to let him know that “The new cover is lovely, the book is priced at a very reasonable £5 - the only thing missing from the original is the index, which is slightly tricky on a book with no page numbers. Kindles do have a text-search capability though, which should help. I'd be grateful if you could spread the word.”

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Welcome

Quo Vadis Design sells software for the Socratic Quantum Leap computer (QL) and variants including a new OS called SMSQ/E.

The QL is a computer in its 25th year Anniversary.

News

- QVD QL News Blog - keep up to date
[News Blog](#)
24/04/2009
- Quo Vadis Design Website Launched
01/02/2009

FEATURED PRODUCT



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**QPC2 IS NOW FREE AND
AVAILABLE FROM MARCEL
KILGUS WEBSITE**

<http://www.kilgus.net/qpc/index.html>

**Congratulations to Marcel
on becoming a Father**

**Check the QL News Blog on
our website for updates.
www.ql-qvd.com/blog**

Sandy Electronics No More?

Dave Park has wound up Sandy Electronics as a corporate company, but will continue to work on his hardware projects as a sole trader. As of December 1st, the original company is no more,

Dave becomes sole proprietor (a new name will be needed for the new business) and is relieved of much of the financial, regulatory and paperwork sides of the original business, freeing him up to come up with a new name for the business and to work on doing what we all want as a QL community, produce reasonably priced add-ons for QL computers.

The last large original batch of felt pads has now been sold – a final few more smaller batches will be produced by hand in the near future. Dave said on QL Forum that “They only just broke even and consumed far too much time.”

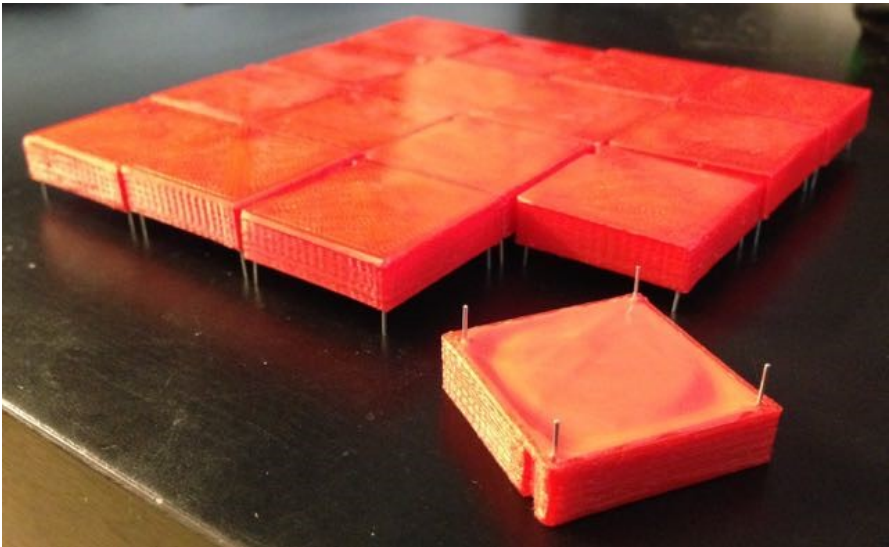
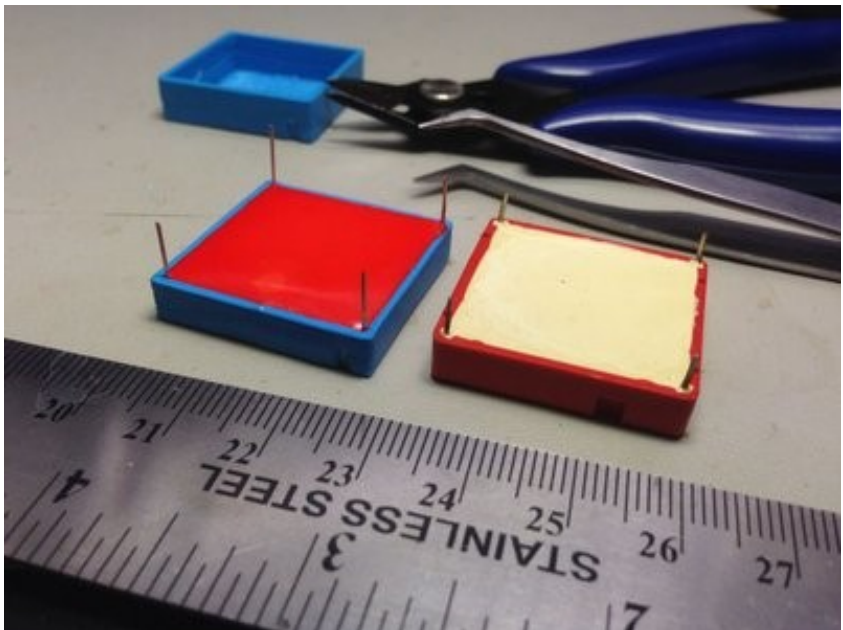


Image courtesy of Dave Park

He will then release a small batch of 48 40LF220 (Super) Gold Card batteries, as 3 batches of 16. This isn't the PCB-style prototypes, but the full potted 40LF220 as originally sold by SAFT. It will have a slightly higher capacity and the same materials, construction and 10 year shelf life of the original.

The shell is 3D printed ABS with an EU-approved BFR flame retardant. The potting compound is a flame retardant, non-conductive epoxy. The legs are intentionally thinner - they make perfect contact anyway, do not fall out, and are a little easier to install/remove.

Regulatory approval has been received in mid December, meaning they can be flown in non-passenger planes, important for mailing purposes. Primary lithium cell, 3.0 V, 560 mAh, 27x27x7mm with 5mm legs. That's 6 years of standby in a (S)GC. They will be £12.95 each.



(picture from QL Forum)

The major product being worked on is the SuperRAM expansion card. This product looks set to fill a gaping gap in the market at the moment for stand-alone RAM expansion cards, which can be used in conjunction with a QL fitted with a QL-SD expansion, for example, or with old-style floppy disk interfaces which have no on-board expansion RAM.

Expect this sometime in the first half of 2015. Dave says it has undergone a couple of design changes to make it more flexible, and hopes people will be very pleased with the results.

QL-SD News

During November, Paul Veltjens (who builds the QL-SD) circulated an interesting email to the QL Forum, where he stated:

“Is there demand for a external version of QL-SD? End of this month I will offer some first external QL-SD devices.

So you don't have to open your QL anymore. And you can use it on any stock QL with any ROM. As its PCB is significant larger and in lower numbers this feature will be a little bit more expensive than the internal version.”

Further details soon followed:

“It's for the rom port (by design). The rom is on top looking the same as the internal version and the sd card is on the under side to the right. And I'm afraid Goldcards and SuperGoldCards are also not guaranteed to work or fail as the internal version. Also RAM requirements are the same as the internal version.”

Shortly afterwards he elaborated on a new feature for the QL-SD:

“As the QL-SD interface is mounted in the QL it is difficult to disable it other than opening the QL and take it out and insert the ROMs again. Sometimes users want to use a dongle or mICE interface. So we added a feature to new built QL-SD that will be available shortly on SMR (SellMyRetro.com).

You can add a switch that disables QL-SD. Then you can use the ROM-port again loading programs via micro drive or floppy. The manual still has to be updated to include this new feature.”

Assembly Mailing List eMagazine

Norman Dunbar writes:

Edition 2 of the eMagazine (the follow up to Norman’s Assembler articles in QL Today magazine) is in progress, there's still time to sign up if you haven't already, but what I have managed to do is take all the previous articles that were published in QL Today over the many years, and merge them together (with George Gwilt's corrections of course!) into a small PDF book of about 300 odd pages. *(300 pages – small? News Ed.)*

The various ASCII Art diagrams have been redone as "dot" files which then get converted to png images with Graphviz. A nice tool when you can get your head around it! You describe the diagram you want and it draws it for you.

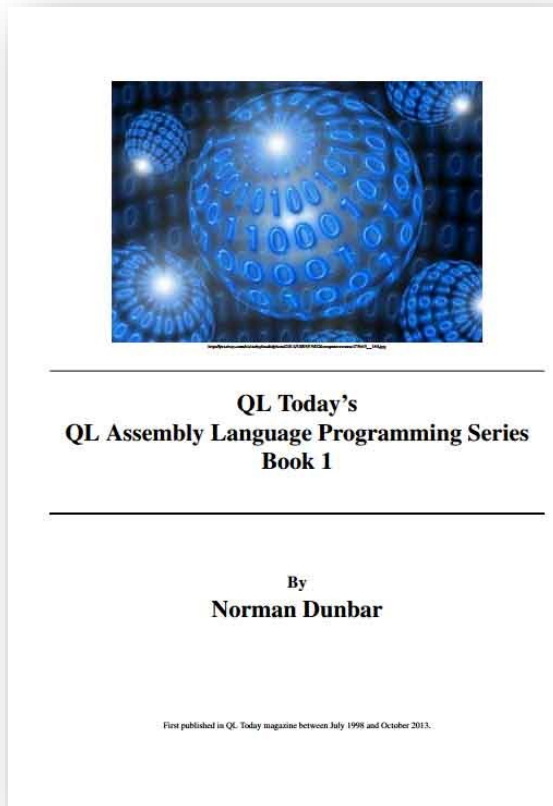
All the linked list images and such like have been changed to proper images now.

The original articles have been run through a tool called db2latex which takes my original source files in Docbook XML format, and

spits out a pile of "latex" files (pronounced Lay-tech, as in a Scottish loch as opposed to an English lock!)

These were modified slightly to add captions etc to the diagrams and (most of) the tables, then typeset with pdfLatex to produce the book you will find at:

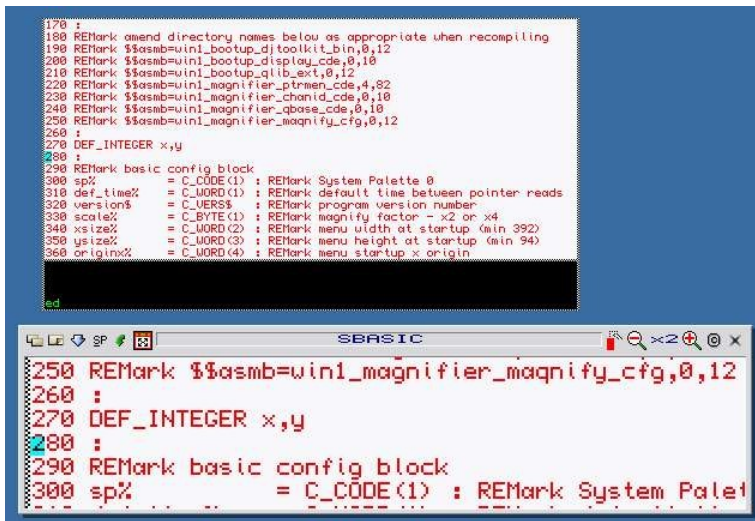
http://qdosmsg.dunbar-it.co.uk/downloads/QLToday/QL_Assembly.pdf.



I hope you enjoy it. I know from some of the feedback I've received since March (yes, it really was back in March that issue 1 came out!) that some people wanted a beginners' section. Hopefully this helps!

MaQnifier

MaQnifier is a brand new screen magnifier program by Dilwyn Jones for those with restricted eyesight or anyone who wishes to magnify an SMSQ/E high-resolution screen (e.g. when doing detailed graphical editing). Modern high resolution screens mean that CSIZE 0,0 text can look very small sometimes.



The image shows a screenshot of a MaQnifier window. The window is titled 'SBASIC' and contains a magnified view of a program window. The program window's content is as follows:

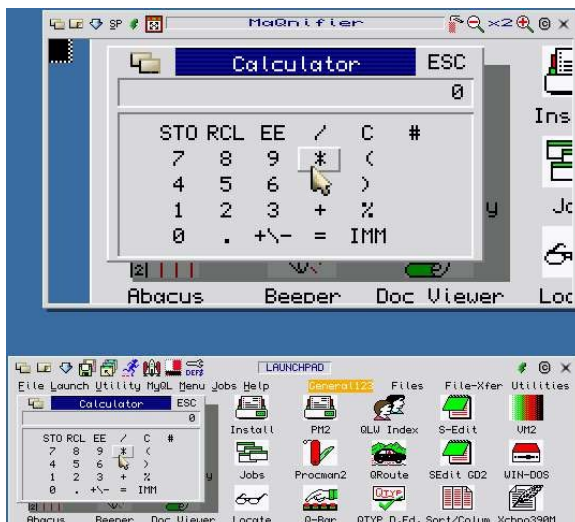
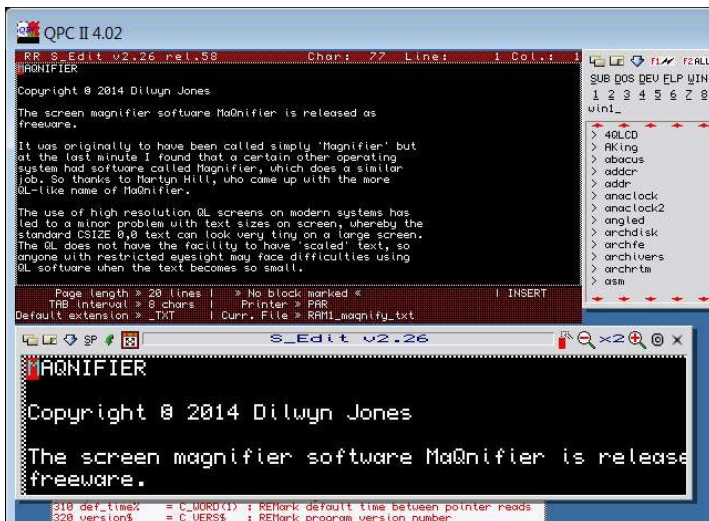
```
170 :
180 REMark amend directory names below as appropriate when recompiling
190 REMark $$osmb=wini_bootup_djtoolkit_bin,0,12
200 REMark $$osmb=wini_bootup_display_cde,0,10
210 REMark $$osmb=wini_bootup_qlib_ext,0,12
220 REMark $$osmb=wini_magnifier_ptmen_cde,4,82
230 REMark $$osmb=wini_magnifier_chanid_cde,0,10
240 REMark $$osmb=wini_magnifier_qbase_cde,0,10
250 REMark $$osmb=wini_magnifier_magnify_cfg,0,12
260 :
270 DEF_INTEGER x,y
280 :
290 REMark basic config block
300 sp%      = C_CODE(1) : REMark System Palette 0
310 def_time% = C_WORD(1) : REMark default time between pointer reads
320 version$  = C_VERSION : REMark program version number
330 scale%    = C_BYTE(1) : REMark magnify factor - x2 or x4
340 xsizex%  = C_WORD(2) : REMark menu width at startup (min 392)
350 ysize%    = C_WORD(3) : REMark menu height at startup (min 94)
360 origin%   = C_WORD(4) : REMark menu startup x origin
```

The magnified view shows the same code, but with a larger font size and a magnification factor of 2x, as indicated by the window's title bar and the 'x2' icon in the top right corner.

You set the program window to a preferred size (configurable and can be set at runtime within the program) to decide how much of the screen area the magnifier occupies – always a compromise between how screen space is shared the MaQnifier and the program it's magnifying.

MaQnifier is pointer driven. Magnify program windows either by following the on-screen pointer, or by following the text cursor in a window for non-pointer programs or text editors. Variable display size (supports all known QL resolutions) and magnification (from x2 to x8). Uses Window Manager 2 colour themes. It works in

mode 4, 16, 32 and 33. Source files are included if anyone is interested in how it works. Requires SMSQ/E version 3.00 or later. I am very grateful to Michael Bulford for advice on certain aspects of the code used in MaQnifier. MaQnifier is available now as freeware and can be downloaded free of charge from: <http://www.dilwyn.me.uk/misc/index.html>



RWAP Software

We have been working hard to safeguard the future of the Sinclair QL through creating an online QL Wiki backed by a repository of QL titles.

The QL Wiki enables people to see what software and hardware was produced for the Sinclair QL. The repository enables people to purchase working copies when their microdrive cartridges fail, or they move onto disks or emulators. Where we can, we obtain permission from the copyright holders to re-release items on the market.

This has enabled us to bring some of the titles back to the market as well as re-ignite interest in the Sinclair QL and its emulators.

Old favourites brought back to life include:

E.V.A., Vroom
Black Knight, Double Block
Jungle Eddi, The Lost Pharaoh
Pangi, the Lonely Joker
Microdeal's Flight Simulator, QL Hopper, The King,
Night Nurse and Cuthbert in Space
Mortville Manor, Darkside of the Moon (£10)

We still retain our existing catalogue, including:

Open Golf, Return to Eden,
Stone Raider II, The Prawn,
Hoverzone, Lost Kingdom of Zkul,
Deathstrike, Horrorday,
Flightdeck and QWord

All games are available on disk or for use with Q-emuLator on the PC **from ONLY £5 each**

Microdrive versions also available - from £10 each.
Memory / system limits may apply - please check before ordering.

Visit the QL Wiki for more details on software, books and hardware for the Sinclair QL:

www.rwapadventures.com/ql_wiki

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Email: rich@rwapservices.co.uk

Website:
www.rwapsoftware.co.uk or www.sellmyretro.com



Vroom by Pyramide



E.V.A by Westwey



Mortville Manor by Pyramide



Double Block by Francois Lancaut



Night Nurse by Microdeal

QL World / QL User Index Updated

v2.2 of QL World/QL User Index by Chris Adams, which now includes all published issues of the magazines, is now available from the Docs/Magazines page on my website. The latest version now includes about 4,700 entries and covers all published issues of QL User up to the point of its merger with QL World in March 1986, and QL World right up to its eventual closure in May 1994.

This version of the index is also Archive based (works on Xchange Archive too) and requires at least 320K free RAM to run. There is also a plain text file version of the index available from the same page, at <http://www.dilwyn.me.uk/docs/mags/index.html>

On the same page, you can download a PDF file which lists program listings published in both magazines as well as a few larger programs which were only available through the Microdrive Exchange at the time.

Q-Dock Sprites

The sprites disk supplied with Q-Dock is now available to download free of charge from the Q-Dock page on my website (Q-Dock itself is available from Quo Vadis Design or direct from me):

<http://www.dilwyn.me.uk/qdock/index.html>

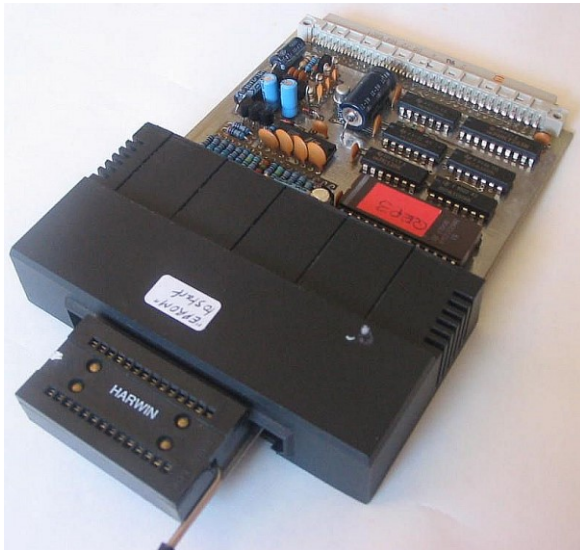
This is a collection of a few hundred 32x32 QL GD2 sprites, which can be used with any QL software able to handle these GD2 sprites. The page includes a screen dump of many of the sprites. Also, thanks to Ian Burkinshaw, the sprites are also available for use with Launchpad version 2.02 or later. As Launchpad uses a slightly smaller icon size, Ian had to resize and adapt these sprites.

Instructions on how to use the sprites with Launchpad are included on the Q-Dock page (see link above).

With so many sprites, you really need a sprite viewer. Well, on the same page you can download one called SPRV. With that program you can view sprites individually or many to a tiled page view. Download it free from the Q-Dock page.

QEPIII Service Manual

Ian Burkinshaw has produced a Service Manual to help with repairing QEP III Eprom Programmer boards, which were originally released by Qjump and more recently available from Qubbesoft. Includes circuit diagrams in the PDF file. The spreadsheet (Excel format) contains test results to aid fault finding. Download the QEPIII Service Manual and test results spreadsheet from <http://www.dilwyn.me.uk/docs/hardware/index.html>



A QEPIII EPROM programmer for QL

Q - Dock is a new program from Dilwyn Jones. The best description of this program is a graphical program launch system. The graphics as can be seen from the pictures below, is based on a 'tray' which icons are 'sat'.



The tray is a sprite, in the same way as the icons are sprites. As the program comes there are 500 icon sprites and 64 tray sprites. With a sprite editor you can of course produce your own 'tray' and icon sprites. It is very clear Dilwyn has put in a lot of work in, to gather from PD sources as well as producing his own sprites. There is not much that is not covered, so the need to produce your own tray/icon is not big issue. Just really if you wish to produce your own style.

A nice feature is that there are 9 trays that you can select with the rectangle icons at bottom centre of the tray. On each tray you can have up to 14 program icons. So you can launch up to a maximum of 126 programmes and/or files, if you are using File Info.

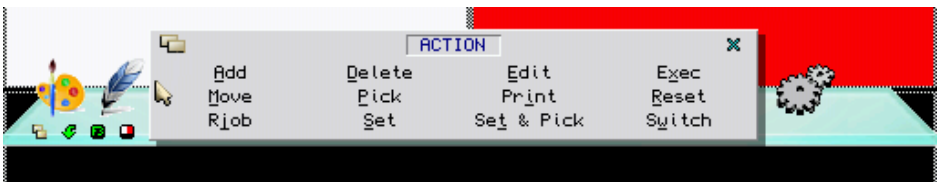
The Q-Dock system comes on three disks, of which the first two have to be purchased. The third disk is free and is public domain. The first disk contains the main program, instructions and transparent dock graphics files (the 'Trays'), the second disk contains the alpha-blend (partially see-through) dock graphics files (again the 'Trays'). The third disk contains the program icon sprites, all 500 of them.

The files can be delivered via e-mail attachment or if you don't have e-mail then on normal discs. More details from Dilwyn.

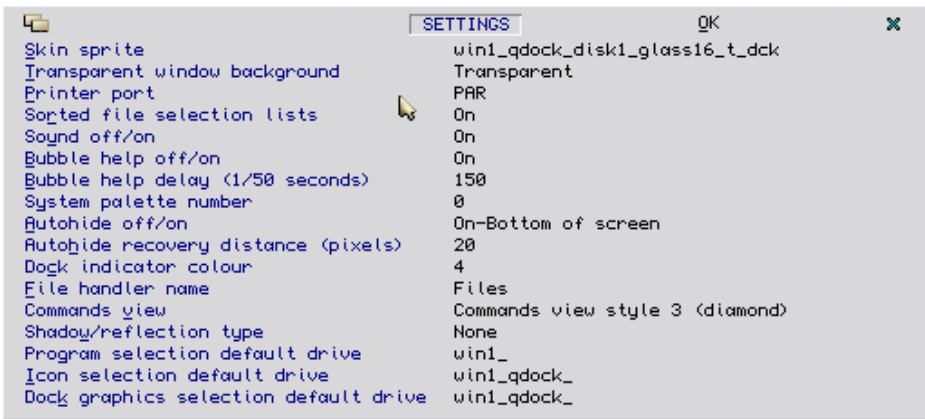
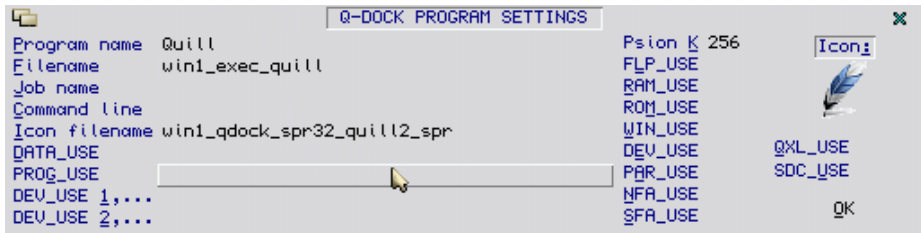
System requirements are as follows, minimum 512K of ram, pointer environment with Windows Manager, V2 or above or SMSQ/E V3 or above and TK2. Desirable but not essential, High Colour system GD2 (8 or 16 bit colours) such as Aurora and QPC2, and a hard disk system. Installation is very simple. Create a directory on your main storage device, for example "Qdock" and just copy all the files from the three disks into this directory.

Run Config so as to define the directory you are using, the default is 'win1_qdock_' Then to launch the program just exec, in the usual way. There is a boot file, which is defaulted to flp1_ so you could use this if you wish. I launched this on one of my QPC2 systems with no problems, it is all very straight forward. If you are familiar with pointer programs you will have no problem following the program.

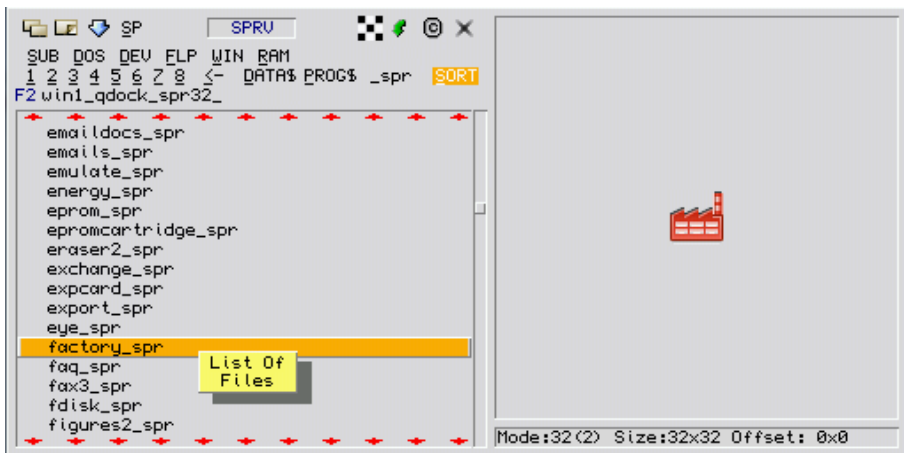
On first starting the tray is empty, so you can populate it as you wish. You do this by clicking on the third button from the bottom left hand side, this brings up the Q-Dock menu. I will not explore all the menus here, it is all clearly set out in the Q-Dock Manual.



The options available are extensive, there is nothing you cannot customise. As can be seen from the following screen shots.



Dilwyn has also provided a sprite viewer which is free, called SPRV, which is available to download from the Q-Dock page on his web site. So you can review all the 500 !! program sprites easily. A useful program in it own right.



JOCHEN MERZ SOFTWARE

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EMail: SMSQ@J-M-S.com**

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**Thanks to Marcel, QPC2 is now freely available.
You can download it from Marcells homepage**

www.Kilgus.net

If you wish to print from QPC2, then you need

QPCPrint

... which is available from J-M-S.

Only 39.90 if you choose EMail delivery.

For additional 4 EUR, delivery will be on CD.

QPCPrint will allow you to print to (more or less) every printer which is installed under Windows (dot matrix, ink, laser, PDF "printer", FAX "printer" etc.)

You can place your order via letter or use the SSL order form on SMSQ.J-M-S.COM - click on "Online orders".

If you order by Mail or through the SSL contact form: We now accept VISA, MasterCard, Diners Club, JCB, Discover, UnionPay, BCard, DinaCard and American Express!

The order form has not been updated for the new card types at the time I write this ad, but it will be updated soon.

I am still working on changing the forms and implementing SEPA on all the order forms.

The tray sprite is a definite size at 512 x 64 pixels. Which does mean it can look a little small on systems such as QCP2 with large screen sizes selected. It also makes the move and menu icons in the bottom left hand corner and the tray selection icons small. So does require a bit more precision with the mouse.

The user has to take into account that Q-Dock was designed for native QL screens with a 512 x 256 pixels screen. However this does not make Q-Dock unusable on higher resolution screens.

Sometimes the tray does not reappear when the user moves the pointer to the bottom of the screen. Dilwyn does say in his notes that this could happen. The program is a challenge for the QL's windows system. All is not lost since CTRL-C with the pointer at the bottom of the screen returns the tray. You may have to do this a couple of times, depending what else is going on, on your system. There will also be occasions where only a part of Q-Dock is visible, all you have to do is then just click on the part exposed.

So in conclusion this is a very good and easy to use program. Looks modern and is flexible. At a cost of £10, it is very good value for money.

Ok it is not a full blown desk top like QDT or LaunchPad, but I guess for most people this all they need from a desk top. Shame QDT was never finished. The only thing you need for most day to day work is a file management package my favourite is Q-Trans 2 (also written by Dilwyn). So with Q-Dock ,Q-Trans and File Info makes a very powerful system for file handing and launching.

Q-Dock is available from Dilwyn Jones directly at this web address <http://www.dilwyn.me.uk/qdock/index.html>

Steve Poole has been working on and off for the past few months now, on a program that tries to solve a particular problem. That problem is often referred to as the Travelling Salesman Program although its application is much broader and includes such diverse things as PCB drilling to water pipeline supplies. Primarily it is intended to be an efficiency algorithm that works out the best way a travelling salesman has to get to a large number of towns in the most economical way.

Now my first thoughts were 'that's fairly straightforward and should be easy to do', however my thoughts were too simplistic, and it is quite complex but even more so, it is a very time consuming process and requires the most efficient algorithm; a quick compiled code and the fast computer to stand a chance of being useful at best.

Let me say that Steve is currently working on this project at the time of writing and progressed extremely well to get thus far. What we have included here are some of the thoughts he has been very gracious to share with us. It is always a brave thing to do as the end result is no way guaranteed, but he feels that it would be beneficial to the QUANTA readers as well as others in the QL community and possibly lead to further contributions and comments.

The initial program listing has not been included as it is not fully efficient and there may be some bugs still in there somewhere.

However there is some code to be getting on with which Steve explains at the end. It is very difficult to check the code when you are always dealing with a large number of variables as the permutations can appear endless. If you do have any suggestions for Steve please let us know. What now follows are some of those thoughts. (Ed.)

.....

I just finished a program that computes the shortest route through 29 nodes in 2 seconds, 58 nodes in 10 seconds, or 115 nodes in 84 seconds. No doubt it could be optimised further and I will now attempt to do this. There are many computations which are repeated, and could be avoided using an array to store them in. But I have little time for optimisation at present.

This is run using qpc2 on a 1.8gig laptop. As far as I know, the method is entirely new. There is one very slight bug which needs fixing, but most often it works ok. Looking on the internet, I see that these timings are quite good.

.....

The 'travelling salesman program', I have been lucky enough to contact a German specialist in the problem. We will be testing the routine against known data first, then rewriting it in C++ to compare its speed to other programs. The method is 'Shrink-wrapping' nodes, an idea I had many years ago, but I only figured out how to code it recently.

That's the secret but I shall say no more for the moment, as we are

hoping to make it into a usable tool. For the moment we are keeping the code under our hats, as it is an early prototype full of debugging routines, and now it works we need to get stuck into full optimisation to get better speed out of it by avoiding redundancies. All in all an interesting project for the next few months.

This version has random data entry, but I have tried it with fixed data, and it gets the answer very nearly dead on... To begin, try reducing the variable on line 160 to say $z=40$, and it will run much faster.

The program gives graphical output, so you can see what is going on. The bug is occasional 'crossover' which isn't allowed, and using REMarked out print items, I have been able to track the problem down to the first element on the array being incorrectly overwritten, unless that cell is defined as at 0,0 acting as a 'home'.

The 'clever bit' is the routine `get_twin`, which uses a coefficient to eliminate longest remaining lines, by finding the closest remaining point. I do not know if this has been done before, but I have read of a 'magnetic attraction' principle which may be similar. The program could be rewritten optimally I am sure, if it is of any interest to members. I would have brought it to Edinburgh, but I won't be able to attend unfortunately. No doubt George could do something much better!

.....

Last week I read in a science magazine that the Clay Mathematical Institute in America are offering a one million dollar prize for anyone who can write a $P=NP$ algorithm. The Travelling salesman problem is quoted to be the typical example of the $P=NP$ problem,

and is quoted as never having been resolved. It would appear that the principal difficulty with the travelling salesman problem is that no-one has written an algorithm which can solve it in a reasonable length of time. But I have not seen what length of time would be considered as reasonable. The program sent in takes an exponentially long period of time as the number of data items increases. But in a French challenge, the salesman had to visit just 70 towns, which the program handles quite rapidly.

I am trying to think of ways to optimise it, so as to remove the exponential barrier. This would probably involve eliminating redundant calculations which repeatedly calculate the distance between the current trajectory and isolated points, maybe sorting them from time to time into distance order.

.....

Back to the computer program. The bug was not a bug at all but a mathematical logic error.

It was hell to find, as it only occurred once every thirty or so RUNs, using 200 points of random data. This meant watching the programs running for hours, until the problem cropped up. Next you would have to capture all the data with a debugger, RUN again using it whilst tracing through the run until the bug cropped up and then interrupt.

Then examine everything to find which part of the program was overprinting the stack. But of course I could not find any program errors as there were none. Many hours wasted on a wild goose

chase. Eventually, I made hand made diagrams of the geometry of the 'bug', and noticed that for certain configurations of triangles, the maths were not quite right. Oof!

So now I have solid information as to where to go from here, I will have to get my test data and reformulate the maths. But at least I have the internet to revise my knowledge of triangle formulae. As the maths I developed is not conventional, it could be that I am snookered. But as the program is 98% correct, maybe the bug is of little consequence.

.....

Here is a progress report: With a little spare time I have managed to accelerate the TSP program considerably. Now to optimise further, I need to rewrite the sorting parts of the program completely.

At present, using test data, the program gets the shortest path around 100 points 95%+ correct in 9 seconds. I am hoping to improve this speed, but in view of the complex nature of the stack, I will have to write a modified program by hand and test it on paper before attempting any recoding.

Enclosed is the stack_bas program, as these functions will be used in the TSP. The MATRIX\$ functions are general purpose, and could be used in any program which needs to access much bigger numeric arrays than basic allows. (This was discussed in some detail on the QL Forum).

It may run with Turbo_tk_code instead of turbo_sms_code. I will not know until mid-January. I will tweak one or two strings to make them more compatible with Turbo, but they compile and execute Ok as it stands.

```
100 ::  
  
110 REMark STACK_bas by S.Poole, v8dec14  
  
120 REMark LRESPR win1_Turbo_sms_code  
  
130 CLS: float=6: REMark max=3162x3162  
  
140 DIM  
  
f$(float*2),ok$(float),pok$(float),pek$(1)  
  
150 dim_MATRIX 10,10: demo 0  
  
160 WHEN ERROR : REPORT: END WHEN : STOP  
  
170 :  
  
180 DEFine PROCedure demo(error_  
  
190 ct=0  
  
200 FOR each_func=1,2  
  
210 IF each_func=1:AT 1,1: PRINT 'POKEing'  
  
220 IF each_func=2:AT 3,1: PRINT 'PEEKing'
```

```

230 FOR row=1 TO Dimx
240 FOR col=1 TO Dimy+error_
250 ct=ct+1: pok$=FLOAT$(ct): pek$='0'
260 IF each_func=1 THEN
270     AT 1,10: PRINT ct
280         ok$=MATRIX$(row,col,poke_,pok$)
285 ELSE
290         ok$=MATRIX$(row,col,peek_,pek$)
300         PRINT STRINGF(ok$)!!
310 END IF
320 END FOR col
330 END FOR row
340 END FOR each_func
350 RECHP matrix_base: PAUSE 250
360 END DEFine
370 :
380 DEFine PROCedure dim_MATRIX(rows,cols)

```

```

390 Dimx=rows: Dimy=cols: peek_=0: poke_=1
400 stack=(Dimx+1)*(Dimy+1)*float
410 matrix_base=ALCHP(stack)
420 WHEN ERRor
430 IF ERRnum=1 THEN
440 RECHP matrix_base: REPORT: ELSE REPORT
450 END IF
460 END WHEN
470 END DEFine
480 :
490 DEFine FuNction MATRIX$(Mr,Mc,Mfnc,M$)
500 IF Mr<0 OR Mr>Dimx OR Mc<0 OR Mc>Dimy
510     PRINT 'Matrix out of range'
520     RECHP matrix_base: STOP
530 END IF
540     Pk=matrix_base+(Mr*Dimx+Mc)*float
550     IF Mfnc=0: RETurn PEEK$(Pk,float)

```

```
560     POKE$ Pk,M$: RETurn '1'
```

```
570 END DEFine
```

```
580 ::
```

HACK

QUANTA LIBRARY

This little gem was found on the QUANTA library GG02 and is included as an example of programming, however no author can be found, if you know the author please inform the editor so that proper credit can be given. (Ed.)

The SuperBASIC program HACK_BAS may be used in TV or MONITOR mode but sets the screen to mode 8. The computer plays the game of GREEN HACKENBUSH against the player. The computer draws a tree and both players take turns to cut a branch. When a branch is cut all other branches that are no longer attached to the ground are also removed. The player who removes the last branch wins. The branch that a player may cut is marked in white.

It is moved up the tree by pressing left or right arrows to chose one of the two branches or down by pressing the down arrow. It starts off at the bottom of the screen. When the chosen branch is reached press enter. When the computer makes its move it marks the branches to be removed in red. They are only removed when a key is pressed.



Screen shot from the game

COMMENTS

The three games illustrate different methods of making the computer play a game. C4 uses the standard alpha-beta tree search algorithm, it is a very suitable game for this as there are at most 7 possible moves at any time. C4 evaluates positions by counting the number of lines with one, two or three of the player's counters and none of the opponents, the values attributed to these are set in the manifest constants one, two and three and could be adjusted to obtain better results.

DOM plays by evaluating moves, as there are too many possibilities for a tree search. It considers the parity (odd or even)

of the spaces left after a move, and tries to leave gaps that its dominoes fit into and not the opponents. There is considerable scope for adjusting the weights of different factors.

HACK plays using a formula for the best move. It is similar to the well known game of 'Nim'. It always plays perfectly and will win if it can. The level of play can be adjusted by making the computer make some random moves. The mathematical theory of Hackenbush and Domineering is described in the books "Winning Ways" by Berlekamp, Conway and Guy. More can be found here:

http://en.wikipedia.org/wiki/Winning_Ways_for_your_Mathematical_Plays

and here:

<http://www.amazon.co.uk/Winning-Ways-Mathematical-Plays-Volume/dp/1568811306>

10 MODE 8:WINDOW 512,256,0,0

20 PAPER 0:BORDER 16,50:CLS

100 WINDOW 448,200,32,16:CLS

102 SCALE 100,0,0:INK 7

105 WINDOW #0,448,40,32,216:INK #0,6:PAPER

#0,1

```
110 PRINT "The player and the computer cut
edgesof a tree in turn . Cutting an edge
removes the branch above it.The edge you can
cut is marked in white and ismoved by the
arrow keys."

120 PRINT "You win by cutting the last edge."

130 PRINT "When the computer cuts a branch
it first colours it red."

140 PRINT "You can make the computer move
first by pressing C."

150 M=127

160 DIM D%(M) ,R%(M) ,L%(M) ,T%(M) ,V%(M) ,X(M) ,Y
(M)

170 X(0)=80:Y(0)=-50:R%(0)=1:L%(0)=1

180 SKILL=100:RB=0

190 G%=1:MAKE 0,50,0,0

200 PRINT "Press any key to
```

```
start":X$=INKEY$(-1):CLS

210 INK 4:DRAW 1

220 CLS #0:AT #0,1,0

230 PRINT #0,"L -change skill level / N -new
tree"

240 PRINT #0,"C -computers move / ENTER -cut
branch"

250 PRINT #0,CHR$(188);CHR$(189);CHR$(191);"
-move cutter / ESC -quit"

260 A=1:B=1

270 POKE 163976,255

280 REPeat LOOP

290 IF A<>B THEN :INK 4:EDGE B:INK 7:EDGE
A:B=A

300 CH=CODE(INKEY$(-1))

310 IF RB=1 THEN INK 0:DRAW BRANCH:RB=0

320 SElect ON CH
```

```

330 =192:IF L%(A)<>0 THEN A=L%(A)
340 =200:IF R%(A)<>0 THEN A=R%(A)
350 =216:IF A>1 THEN A=D%(A)
360 =CODE("C"):INK 4:EDGE A:CMOVE:CUT
BRANCH:INK 2:DRAW BRANCH:RB=1:A=1:B=1
370 =10:IF A>1:CUT A:INK 0:DRAW A:CMOVE:CUT
BRANCH:INK 2:DRAW BRANCH:RB=1:A=1:B=1
380 =CODE("L"):AT #0,0,0:INPUT #0,"SKILL
LEVEL (0-100) ";SKILL:CLS #0,4
390 =27:STOP
400 =CODE("N"):CLS:G%=1:MAKE 0,50,0,0:INK
4:DRAW(1):A=1:B=1
410 END SElect
420 END REPeat LOOP
430:
1000 DEFine PROCedure CMOVE
1010 IF T%(1)=0 THEN INK 7:AT 10,15:PRINT "I

```

```

LOSE!":BRANCH=1:RETurn
1020 IF T%(1)>0 THEN INK 7:AT 10,15:PRINT "I
WIN!":BRANCH=T%(1):RETurn
1030 EVAL(1)
1040 IF V%(1)=0 OR RND(100)>SKILL THEN
BRANCH=BADMOVE(1):RETurn
1050 BRANCH=GOODMOVE(1,0)
1060 END DEFine
1070 :
2000 DEFine FuNction GOODMOVE(N%,W%)
2010 LOCal A%,B%
2020 IF W%<0 THEN RETurn N%
2030 IF T%(N%)>0 THEN RETurn GOODMOVE(T%
(N%),W%-1)
2040 A%=V%(L%(N%))+1:B%=V%(R%(N%))+1
2050 IF (A%^W%)<B% THEN RETurn GOODMOVE(R%
(N%),(A%^W%)-1)

```

```

2060 RETurn GOODMOVE (L% (N%) , (B%^^W%) -1)

2070 END DEFine

2080 :

3000 DEFine FuNction BADMOVE (N%)

3010 IF T% (N%)=0 THEN RETurn N%

3020 IF T% (N%)>0 THEN RETurn BADMOVE (T% (N%))

3030 IF V% (L% (N%)) >V% (R% (N%)) THEN RETurn
BADMOVE (L% (N%))

3040 IF V% (R% (N%)) >V% (L% (N%)) THEN RETurn
BADMOVE (R% (N%))

3050 IF RND>.5 THEN RETurn BADMOVE (R% (N%)) :
ELSE RETurn BADMOVE (L% (N%))

3060 END DEFine

3070 :

4000 DEFine PROCedure EVAL (N%)

4010 IF T% (N%)=0 THEN V% (N%)=0:RETurn

4020 IF T% (N%)>0 THEN EVAL (T% (N%)) :V% (N%)=V%

```

(T% (N%)) +1 : REturn

4030 EVAL (R% (N%)) : EVAL (L% (N%))

4040 V% (N%) = (V% (L% (N%)) +1) ^^ (V% (R% (N%)) +1)

4050 END DEFine

4060 :

5000 DEFine PROCedure EDGE (N%)

5010 LINE X (N%) , Y (N%) TO X (D% (N%)) , Y (D% (N%))

5020 END DEFine

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5030 :

6000 DEFine PROCedure DRAW(N%)

6010 EDGE(N%)

6020 IF T%(N%)=0 THEN RETurn

6030 IF T%(N%)>0 THEN DRAW(T%(N%)) :RETurn

6040 DRAW(R%(N%)) :DRAW(L%(N%))

6050 END DEFine

6060 :

7000 DEFine PROCedure MAKE(TH,L,N%,Q%)

7010 LOCal H%

7020 H%=G%:G%=G%+1

7030 D%(H%)=N%:T%(H%)=0:L%(H%)=0:R%(H%)=0

7040 Y(H%)=Y(N%)+COS(TH)*L:X(H%)=X(N%)+SIN
(TH)*L

7050 IF RND(2 TO 6)>Q% THEN T%(H%)=-1:L%(H%)
=G%:MAKE TH-.5,L*.7,H%,Q%+1

7060 IF RND(2 TO 6)>Q% THEN T%(H%)=T%(H%) -

```

1:R%(H%)=G%:MAKE TH+.5,L*.7,H%,Q%+1

7070 IF T%(H%)=-1 THEN IF L%(H%)=0 THEN T%
(H%)=R%(H%): ELSE T%(H%)=L%(H%)

7080 END DEFine

7090 :

8000 DEFine PROCedure CUT(N%)

8010 IF L%(D%(N%))=N% THEN

8020 L%(D%(N%))=0

8030 IF T%(D%(N%))<0 THEN T%(D%(N%))=R%(D%
(N%)):RETurn

8040 T%(D%(N%))=0:RETurn

8050 END IF

8060 R%(D%(N%))=0

8070 IF T%(D%(N%))<0 THEN T%(D%(N%))=L%(D%
(N%)):RETurn

8080 T%(D%(N%))=0

8090 END DEFine

```

The Quanta Library actually contains a large amount of very useful programs which often do not get the credit they deserve. Since much of the library software is quite old, it can sometimes be a challenge getting some of the older programs running on the most modern systems, while some are timeless and work just as well on modern systems as they did on original QLs.

Sometimes, only a little tinkering is needed to get some programs working on modern emulators. By far and away the best trick to persuade software to work on modern systems is to restart the emulator in the closest mode to a QL you can get.

In other words, make sure the emulator runs in the old QL mode 4 or mode 8 (whichever the program needs). Then, if the emulator supports higher resolutions than 512x256 pixels (e.g. QXL, SMSQmulator or QPC2), make sure it starts in the 512x256 pixel mode.

Many older programs need the system variables to be at the same address or location in memory as they were on the original QL. In other words, address 163840 (decimal), which in turn is 32,768 bytes above the base of the screen memory, which on an original QL was at address 131072 (decimal). The reason why this is important is that some older programs tend to use the POKE command or similar to alter the system variables to achieve certain things which might otherwise be impossible without very complex coding.

It is very important to note that if the emulator has started in a different mode, even if you change the screen to QL modes with commands like the DISP_xxx ones in SMSQ/E, this may not move the system variables, for example, so older programs may still encounter problems.

Resetting the emulator to maximum compatibility with a black QL is key to getting difficult programs to run reliably on an emulator. If the emulator normally runs SMSQ/E and even these changes don't allow the program to run, it is worth experimenting with emulators which allow the use of QL ROM images, to improve compatibility even further.

The best efforts of SMSQ/E inevitably mean there will always be programs which rely directly on certain code or addresses in the QL ROM. This is where instead of QPC2 or SMSQmulator (both of which use the SMSQ/E variation of the operating system), using QL2K or QemuLator may prove useful, for example.

If you have a program which needs to use a mode 4 512x256 pixel screen but is not fussed about the system variables, Marcel (author of QPC2) has another trick up his sleeve.

For QPC2, he has provided a command called QPC_QLSCREMU. This command intercepts attempts by programs to write to the address space of the original QL screen and converts them to writes to a 512x256 area at the top left of the current screen mode. If the screen is not in mode 4 or 8, it also tries to convert the writes into the equivalent in the new mode. The command has options to

force the writing to 4 or 8 colour mode, or an automatic mode. It can't do everything, and there will always be one or two programs for which it doesn't work, but it's yet another weapon in the compatibility armoury.

Looking the other way, you might get older programs which fail to work on a QL of all things, surprisingly. Usually, this is down to either memory size or ROM version and there is little you can do sometimes.

It can be useful reading the articles by Simon Goodwin and Mark Knight regarding the bugs and variations between ROM versions. These have been published in magazines such as QL World and International QL Report. These and related articles can be found on my website at:

<http://www.dilwyn.me.uk/docs/basic/index.html> and
<http://www.dilwyn.me.uk/docs/articles/index.html>

They can be a useful guide to helping you sort out such issues yourself without having to find an "expert" to assist you. It can be amusing and educational tackling such issues in SuperBASIC programs, tinkering in this way armed with useful articles like this. After all, "tinkering" is what Qling is all about.

I know of some programs which load extensions and try to use them in the same BASIC program. This is bad practice anyway, but doomed to fail on version AH and JM ROM QLs. The solution is to remove the part which installs the extensions and put it into a

separate program which installs the extension, then chains the original program.

There are some programs which will only work on a QL with a specific amount of memory. This is usually because the program contains what is called 'position dependent code' – it's written to run from a certain address in memory and absolutely nowhere else will do. These are usually early QL programs written before programmers got used to the concept of "position independent code" which is the norm for QLs – programs which will run from most memory addresses.

Sadly, not a lot can be done about such programs, other than to try to trim the amount of memory available to match that of the QL configuration on which it was designed to work. This is usually 128K of memory, although there were a few programs which needed expanded memory, a fixed and specified amount such as 512K or 640K.

Some systems provide a BASIC extension called RES_128. This resets the system to a fixed 128K RAM system and can be the only way to get a position dependent 128K RAM program to run. Look in the manual for your particular system for details of how the command works on your system and indeed whether the facility exists or not on the system. There are extensions called RES and Memory_Shrink 2.60 on the Toolkits page on my website at :

<http://www.dilwyn.me.uk/tk/index.html>

that you can try if your system does not have a RES_128 command.

This article provides a basic guide to the most common reasons why some programs fail on some types of systems and how you can begin to try to find a way to persuade such programs to run. It would be very interesting if readers write in with examples of how they got such programs to work on their systems.

QUANTA HELPLINE

DILWYN JONES

Members wishing to submit helpline requests via email can use the email address helpline@quanta.org.uk or if you prefer to use traditional post, please send the helpline request to me via the address printed inside the front cover of the magazine.

Obviously, we cannot guarantee to answer every query we receive, but we will do our best! Where we have been unable to answer the queries, we may print the help request as an open request in the magazine to ask if any of the readers can come up with a solution. And, of course, if readers feel that they have a better solution than we came up with, or would like to correct any errors we make, please write to us!

Q. How can I get a serial mouse working with a QL?

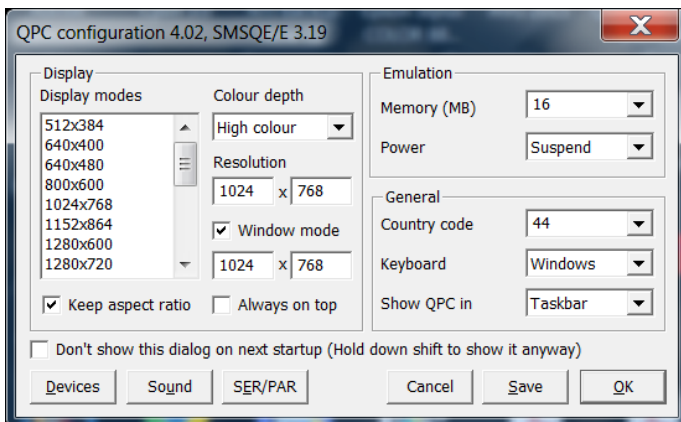
A. The best known way is by using a copy of Albin Hessler's SerMouse software. This was available through Jochen Merz Software and was bundled with copies of SMSQ/E in some cases, in fact the SMSQ/E manual available at:

<http://www.dilwyn.me.uk/docs/ebooks/index.html> includes full instructions for using the SerMouse software if you can get hold of a copy of the software.

An alternative is to use a mouse driver contained in Simon Goodwin's DIY Toolkit, volume I. This allows a serial mouse to be used to emulate cursor key presses on the keyboard, making it easy to use in your own program, as well as allowing it to be used with pointer environment (which responds to cursor key presses normally).

Volume I of DIY Toolkit includes the text of the original article in QL World magazine, plus assembler sources and code files. Download the full DIY Toolkit from <http://www.dilwyn.me.uk/tk/index.html>

Q. I am using QPC2 and can't get a U.K. Pound Sterling symbol.



Screen shot from the program

A. Either the QPC keyboard setting or the computer's international settings are set to a non-UK keyboard. In QPC2, try setting the keyboard country code to 44 (UK) first. This is in the startup configuration box for QPC2 – if this doesn't show up when QPC2 starts, restart the emulator and hold down the SHIFT key to show it anyway.

Q. The printer on my QL (admittedly rather old) insists on printing a 'hash' symbol # instead of a UK £ symbol.

A. Many older printers have a set of DIP switches inside which allow you to set the country of the character set used. This varies from printer to printer, so you need to find the information for the printer concerned. For many printers, this defaults to USA, where the UK £ symbol (CHR\$ 96 on a UK QL ROM) is in the same character code slot as the # symbol – CHR\$ 35.

On some printers, CHR\$ 96 is actually a backtick symbol ` and you may need to set a character code translate either in the printer driver or (if your QL ROM version supports it) the TRA command. For details of how to use the TRA command, see Simon Goodwin's article on the subject at <http://www.dilwyn.me.uk/docs/articles/tra.zip>

Q. I'd like to design some pages using the QL and Sinclair fonts. Where can I get these?

A. You're in luck, there are exactly such fonts available from the Fonts page on my website, at:

<http://www.dilwyn.me.uk/fonts/index.html>

These come in a mixture of TrueType, ATM, Proforma and QL character fonts.

Q. A program I am writing needs to run in a different way on different QL compatibles and emulators. How can it detect which type of system it's running on?

A. If you are using SMSQ/E, read up on the MACHINE and PROCESSOR extensions to SBASIC which return different values depending on the systems they are running on. If you go to the address <http://www.dilwyn.me.uk/docs/articles/index.html> on my website you can find articles called 'Machine Type', 'Machine Type QemuLator' and 'What Hardware' on this very subject.

SUBSCRIPTIONS

JOHN GILPIN

Many thanks to those who have already renewed their Membership Subscription for 2015 (one year) or 2015/16/17 (three years). This has saved me a great deal of time and will thus make the auditing of the QUANTA Accounts easier too.

For those who have not yet done so, please will you attend to this matter at your earliest convenience.

**COPY DATE for FEB / MAR 2015 ISSUE is:
5th FEB 2015**

Please ensure that your copy reaches the editor on or before that date. Copy on Paper, Magnetic Media or by Email. Text & listings are preferred in ASCII format as text files, Microsoft™ Word Documents or in QL Quill formatted files. All graphic submissions in as higher resolution as possible, preferably in PNG format, other forms of submission can also be accepted, please contact the Editor for details.

**All Contributions are Welcome
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